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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/003,052	11/02/2001	Renat Vafin	NL 010529	4944

24737 7590 10/14/2004

PHILIPS INTELLECTUAL PROPERTY & STANDARDS
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EXAMINER	
RIVERO, MINERVA	

ART UNIT	PAPER NUMBER
2655	

DATE MAILED: 10/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/003,052	VAFIN ET AL.	
	Examiner	Art Unit	
	Minerva Rivero	2655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 10/003052.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 15 is objected to because of the following informalities: the term "second length" is indefinite. Appropriate correction is required.

2. Claim 26 is objected to because of the following informalities: Claim 26, an apparatus, is dependent upon claim 1, a method. Appropriate correction is required.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 21 and 22 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 21 and 22 recite a signal; a signal is non-functional descriptive subject matter per se. See MPEP § 2106 IV (b).

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 3, 5-12, 18 and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Levine (U.S. Patent 6,266,644).

Regarding claims 1 and 25, Levine discloses a method and apparatus of coding an input signal, the

method comprising:

estimating a location of at least one transient in a time segment of the input signal (Col. 13, Lines 49-60);

modifying the location of the transient so that the transient occurs at a specified location on a predetermined time scale to obtain a modified signal (Col. 15, Lines 41-50; Fig. 28, element 2815); and

modeling the modified signal (Col. 15, Lines 50-52).

Regarding claim 3, Levine further discloses the specified locations on the predetermined time scale are defined by integer multiples of a plurality of possible locations on the predetermined timescale (Col. 1, Lines 51-53; (resulting transient-region), Col. 12, Lines 58-61; Co. 15, Lines 48-50; Fig. 8 (transient region); Fig. 9, element 903; Fig. 28, element 2815).

Regarding claim 5, Levine further discloses the modeling uses sinusoids to represent the modified signal (Col. 2, Lines 15-18).

Regarding claim 6, Levine further discloses restricted time segmentation is also applied to tonal and/or noise components of the input signal (time scale modification, Col. 5, Lines 48-51).

Regarding claim 7, Levine discloses the estimation of the location of transients is carried out using an energy-based approach (Col. 11, Lines 34-38).

Regarding claim 8, Levine further discloses the location of transients is carried out using two sliding windows (Hamming windows with an overlap of 50%, Col. 13, Lines 52-54).

Regarding claim 9, Levine discloses the location of transients involves the location of a beginning and an end of each transient (Col. 15, Lines 48-50).

Regarding claim 10, Levine discloses each located transient is moved by a cut and paste method from its original location to begin at a location on the predetermined time scale (Col. 24, Lines 37-40; Fig. 28, element 2815).

Regarding claim 11, Levine discloses the remaining section of the input signal between two located modified transients is time-warped to fill the gap remaining following the relocation (time scale modification, Col. 24, Lines 24-27 and 46-51; Fig. 30).

Regarding claim 12, Levine further discloses the time-warp is a lengthening or a shortening of said remaining section (stretch and compress, Col. 24, Lines 24-27).

Regarding claim 18, Levine discloses the modification of the or each transient is performed using a transformation into a frequency domain (Col. 4, Lines 16-20; Fig. 10).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Levine (U.S. Patent, 6,266,644), as applied to claim 1 above.

Levine discloses that each transient is relocated (transient mover, Col. 24, Lines 37-40), but does not specifically disclose a nearest specified location of a plurality of possible locations on the predetermined timescale.

However, it would have been obvious to one ordinarily skilled in the art at the time of the invention to relocate the transient to a nearest of a plurality of possible locations in order to introduce the least possible perceptual error.

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Levine (U.S. Patent 6,266,644) as applied to claim 1 above, in view of Teh *et al.* (U.S. Patent 5,636,324).

Regarding claim 4, Levine does not disclose but Teh *et al.* do disclose the predetermined minimum time segment size has a length in the range of approximately 1 millisecond (ms) to approximately 9 ms (frames, Col. 4, Lines 47-48).

It would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the teachings of Levine by having the minimum time segment

length in the range of approximately 1 millisecond to approximately 9 ms as taught by Teh *et al.* in order to have a time segment length that suits a particular application.

10. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Levine (U.S. Patent 6,266,644) as applied to claim 11 above, in view of Wu *et al.* (U.S. 2002/0116199).

Regarding claim 13, Levine does not disclose but Wu *et al.* do disclose the time-warping preserves the amplitudes of edge points of the modified signal ("enforces boundary conditions" [0009], Lines 23-25).

It would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the teachings of Levine with preserving the amplitudes of edge points of the modified signal as taught by Wu *et al.* in order to minimize perceptible discontinuities in the audio.

11. Claims 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levine (U.S. Patent 6,266,644), as applied to claim 11 above, in view of applicant's acknowledged prior art ("An introduction to the psychology of hearing", Academic Press, 1997).

Regarding claim 14, Levine discloses the time warp is carried out by interpolation (Col. 3, Lines 54-56), but does not explicitly disclose where the change in the fundamental frequency of the remaining section is less than approximately 0.3%.

However, applicant's acknowledged prior art teaches limiting the change of the remaining section to less than approximately 0.3% (Page 14, Lines 22-26).

Therefore, it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the teachings of Levine by having the time-warp carried out by interpolation where the change in fundamental frequency of the remaining section is less than approximately 0.3% as taught by applicant's prior art since having a change of less than 0.3% in the fundamental frequency yields an acceptable reproduction of the original signal with no perceptible pitch difference to the listener.

Regarding claim 15, Levine discloses the remaining section is split into a first length immediately after the modified transient and a second length (frames, Col. 15, Lines 11-17; Fig. 8; Fig. 9).

Levine does not explicitly disclose but applicant's acknowledged prior art teaches limiting the change of the fundamental frequency to 0.2% (Page 14, Lines 22-26). A change in the fundamental frequency of 0.3% or more has been found to produce a perceptible pitch difference.

Therefore, it would have been obvious to supplement the teachings of Levine with the 0.3% limit as taught by applicant's prior art so as to obtain a signal with no perceptible pitch difference to the listener.

Regarding claim 16, Levine further discloses the first length is approximately 8-12 ms (Col. 3, Lines 51-53).

Regarding claim 17, Levine discloses where the interpolation is insufficient to fill a gap in the remaining section, an overlap-add procedure is used (Col. 19, Lines 53-59).

12. Claims 19 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levine (U.S. Patent 6,266,644) in view of Johnston (U.S. Patent 5,285,498).

Regarding claims 19 and 26, Levine does not explicitly disclose but Johnston does disclose a method and apparatus including side information in the modeled modified signal, which side information describes an original time difference between corresponding transients in at least two channels (synchronization and framing information, Col. 7, Lines 50-55).

It would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the teachings of Levine with including side information in the modeled modified signal describing an original time difference between corresponding transients in at least two channels as taught by Johnston and thus decoding the signals without introducing temporal discrepancies that may be perceptible to the listener.

13. Claims 20 -24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnston (U.S. Patent 5,285,498) in view of Levine (U.S. Patent 6,266,244).

Regarding claims 20, 21 and 23, Johnston discloses a method and decoder and a modeled modified signal where the modeled modified signal further comprises side information describing an original time difference between corresponding transients (synchronization and framing information, Col. 7, Lines 50-55), a method and decoder for synthesizing a synthesized signal for the at least two channels (reconstruction of right and left channels, Col. 24, Lines 48-51) and a method and decoder for unwarping the synthesized signal according to the original time difference (decoder, side information, Col. 21, Lines 35-38; synchronization and framing information, Col. 7, Lines 50-55).

Johnston does not disclose but Levine does disclose a method and decoder for receiving a modeled modified signal in which a location of transients in at least two channels has been modified (Col. 5, Lines 48-51).

It would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the teachings of Johnston with a modeled modified signal in which a location of transients in at least two channels has been modified as taught by Levine so as to enable a higher fidelity encoding of the transients and avoid audible pre-echo artifacts.

Regarding claim 22, Johnston further discloses a storage medium on which a modeled modified signal has been stored (Fig. 1).

Regarding claim 24, Johnston discloses an audio player comprising a decoder and a reproduction unit for reproducing the unwarped synthesized signal (Col.3, Lines 6-9).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. *A Sines + Transients + Noise Audio Representation for Data Compression and Time/Pitch Scale Modifications*; AES 105th Convention, Scott N. Levine and Julius O. Smith III.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minerva Rivero whose telephone number is (703) 605-4377. The examiner can normally be reached on Monday-Friday 8:30 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris To can be reached on (703) 305-4827. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MR 10/01/2004

TĀLIVALDIS IVARS ŠMITS
PRIMARY EXAMINER